CALIFORNIA ~~STATE~~ BOARD OF HEALTH.

MONTHLY BULLETIN.

Entered as second-class matter August 15, 1905, at the post office at Sacramento, California, under the Act of Congress of July 16, 1894.

Vol. 4. SACRAMENTO, JANUARY, 1909. No. 8

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THE PROTECTION AFFORDED BY VACCINATION AGAINST SMALLPOX.

Fortunately there are few subjects in medical literature on which such a mass of facts has been collected as that of vaccination. In order to consider intelligently the protective power afforded by this means, it will be necessary to make comparison of a period of time before vaccination was in vogue, with a like period after vaccination became general. The statistics upon which this article is based are from most reliable sources and their authenticity is above question. We all know that smallpox has in the past proven fatal in a large proportion of those whom it attacked, that it is an eminently infectious disease, and that it is carried from person to person; that it is no respecter of individuals and seizes on all unprotected ones who come within its range.

The disease was accurately described by the Arabian physician, Rhazes, but a statistical record of its epidemic history is not available prior to the eighteenth century. It is known that before this time the disease was very prevalent and that hardly a decade passed without the population being greatly decreased by this scourge. In England from seven to nine per cent of all deaths were attributable to smallpox, and in Berlin from 1783 to 1797 one twelfth of all deaths were laid to this cause. In France, the death rate amounted to 30,000 annually. Three and one half millions perished from the disease in Mexico in the sixteenth century. It was in 1796 that Jenner performed his first vaccination against smallpox. From this date we find a constantly increasing number of vaccinations, and we can compare directly the death rate from smallpox before and after this date.

For instance, in Sweden in the twenty-four years prior to the introduction of vaccination in 1801, the mortality from smallpox numbered 2,050 victims annually, out of each million of the population. After the introduction of vaccination this mortality was reduced to 158 per million annually. In Westphalia the mortality was reduced from 2,643 per million in the earlier period to 114 in the latter. In Copenhagen the health statistics, which have been accurately kept from year to year, show that in the fifty years previous to vaccination, the mortality was 3,128 per million of inhabitants, and in the succeeding fifty years it was but 286 per million. In other words, the mortality from smallpox after the introduction of vaccination was but one eleventh of what it was before its introduction; in Berlin, it was but one twentieth; in Sweden, one thirteenth; and in Westphalia, one twenty-fifth.

Public health statistics of American cities have not been kept until recent years with that carefulness and accuracy which has characterized the European cities, but the statistics of the city of Boston are reliable and instructive.

After the settlement of the colony at Plymouth in 1620, smallpox appeared frequently in Massachusetts among both the Indian tribes and the English settlers. In 1702, 4.4 per cent of the population died of this disease. In 1721, when the population of Boston was but 11,000, there were 5,989 cases of smallpox, more than one half of its residents being sick of the disease, and of this number 840 died. In the words of Dr. Toner, the historian, "The disease ran riot over the town, visiting all who were susceptible to its poison." In the year 1730, when the city had a population of 15,000 people, there were 4,000 sick of the scourge, and nearly 500 people died. In 1776 smallpox broke out in Washington's army at Cambridge and one author says, "There were scarcely enough men free from it, or not liable to take it, to keep guard at the different hospitals." Compare these terrible records with the city of Boston succeeding the introduction of vaccination. It must be remembered that in the early years vaccination was not thorough, and it has only been comparatively recently that anything like thoroughness has been practiced:

	Deaths.
From 1811 to 1820	6
From 1821 to 1830	8
From 1831 to 1840	214
From 1841 to 1850	534
From 1851 to 1860	732
From 1861 to 1870	500
From 1871 to 1880	1,094
From 1881 to 1887	18

In the mean time Boston had increased in population from a village to one of the largest cities in this country. The average population for the period was 167,700, and the average number of deaths from smallpox per year was 40.

In the pre-vaccination days Wolffberg classifies mortality from smallpox as follows: Smallpox, which before the days of Jenner decimated the infant population of Europe, carried off from 11 to 12 out of every 100 who were sick of the disease. About 33 out of 100 were affected lightly, and 30 received but a touch. Smallpox was general. There were comparatively few who had not suffered from it.

It has been urged by many that malignant diseases are rapidly disappearing as civilization advances, due to better sanitary conditions, and that the comparative rarity of smallpox is not a necessary consequence of vaccination. As an answer to this question, let us examine the condition of the vaccinated as compared with the unvaccinated, with reference to their immunity from smallpox, it being understood that similar environments prevail and that the same period of time is in each case selected. Wherever such parallel observations are made in large populations of the vaccinated and the unvaccinated, the protective power of vaccination is especially manifest.

Below is given a comparison of the death rate per 100 cases in these two classes, large epidemics in different portions of the world being selected. It will be noted that in the majority of instances the mortality among the vaccinated was but one fifth or one sixth that of the unvaccinated:

Places and Dates of Observations.	Total No. of Cases Observed.	Death Rate per 100 Cases.	
		Among the Unvaccinated.	Among the Vaccinated.
France, 1816–41	16,397	16.1	1.0
Quebec, 1819–20		27.0	1.7
Philadelphia, 1825	140	60.0	
Verona, 1828–39	909	46.6	5.6
Milan, 1830–51	10,240	38.5	7.6
Breslau, 1831–33	220	53.8	2.1
Wirtemberg, 1831½–35½	1,442	27.3	7.1
Carniola, 1834–35	442	16.2	4.4
Carinthia, 1834–35	1,626	14.5	0.5
Adriatic, 1835	1,002	15.2	2.8
Bohemia, 1835–55	15,640	29.8	5.2
Galicia, 1836	1,059	23.5	5.1
Wurtemberg	6,258	38.9	3.5
Illinois	1,931	48.6	6.1

In the years 1873-1874 there died in the East Indies about 500,000 and in 1875-1876 about 200,000 people from smallpox. During this time among 120,000 Europeans in the same country there were only two deaths from smallpox. This immunity can be attributed to the thorough and rigorous enforcement of vaccination. In the British census of 1881, the number of children under ten years of age in London was 916,784, which was divided into about 55,000 unvaccinated and 861,000 vaccinated. In the same year the deaths from smallpox were as follows: 782 among the 55,000 unvaccinated and 125 among the 861,000 vaccinated, or one in seventy of the former to one in 6,968 of the latter; a difference of nearly one hundred fold in favor of the vaccinated class. If the London children under ten who were unvaccinated had had the protection which the virus gives, not 782 of them would have died of smallpox, but only 9. If the 861,000 vaccinated children had died at the rate of the 55,000 unvaccinated, we would not be considering 125 smallpox deaths and how they can be reduced, but we should be confronted with the appalling addition of 12,000 and more deaths from smallpox occurring during that year in the London population of children under ten years of age. The very success of vaccination has blinded people to its importance. It is easy to be bold against a danger which is absent. It is easy to despise the antidote when one has no painful experience of the bane.

RAYMOND RUSS.

We commend the above article to every one as a convincing argument in favor of vaccination. The State Board of Health is firm in its belief and advocacy of vaccination and that the only change, if any is to be made in the present vaccination law, should be to extend it so as to apply to all schools.

The Board is, however, executive in its nature and has and will continue to enforce as best it can the health laws of the State as passed by the legislature. It is required to report to the legislature and suggest such enactments as may seem best, but it recognizes them as the lawmaking body of the State and further than giving its opinion on legislation relating to the public health it will not go.

While always ready and willing to give advice it will not take the responsibility of unduly urging legislation which appeals to the prejudices of certain people. In other words, the State Board of Health is not a lobby, nor its members lobbyists.

It believes fully that vaccination will stop smallpox and is, if properly done, almost entirely devoid of danger, and that a cessation of vaccination will be followed sooner or later by a serious epidemic of smallpox with its usual accompaniment of deaths and deformity, and the possibility of quarantine by other states.

HEALTH OFFICERS MEET.

Central California Health Officers' Association will hold their semiannual meeting at Stockton, March 9, 1909, at 10:00 A. M. with the following program:

1.	Address	Dr. R. W. Musgrave President.
2.	Tuberculosis	C. C. Browning, M.D. Monrovia.
3.	Pure Food Law and Its Operation	Prof. M. E. Jaffa State Laboratory, Berkeley.
4.	California Sulphured Fruits and Their Effects Upon the Human System	A. J. Atkins, M.D. San Francisco.
5.	Sewage and Water Purification	Mr. Pearse Oakland.

The attention of the health officers and all others interested in public health affairs is called to the above excellent program arranged by the Central California Health Officers' Association.

The broad scope of the subjects and the prominence of the men who handle them should insure a full attendance. No health officer can afford to miss these excellent meetings. The papers and discussions are of great value but almost equal to them is the acquaintance it gives with others in the same line of work and the interest which is thereby engendered.

We get negligent and into ruts if we keep by ourselves, but by rubbing against others the rust comes off and we do better work. Make a great effort, Doctor, to come and tell us what you are doing.

TRICHINOSIS.

There were two deaths this month from trichinosis besides several cases which were not fatal. The immediate cause of this disease was eating raw or under cooked pork which was infected with trichina, but it is quite probable that it can be charged back against that great enemy of the human race, the rat.

The rat is very susceptible to the disease and dying or being killed in the hog yard is eaten by the hogs and they in turn carry the disease to the human.

Thoroughly cooking the pork will kill the trichina and this should always be done, but it is another reason for a war of extermination against the rat.

RIVER POLLUTION.

The following from the New York Journal of Commerce of December 8th shows to what California will come unless more care is exercised and we stop the pollution of our rivers and bays:

> ### MAKING A CESSPOOL OF THE HARBOR.
>
> The United States Harbor Line Board is to give a hearing to-morrow at the Army Building, on Whitehall street, on the application of the Passaic Valley Sewerage Commission for authority to discharge into the bay near Robbins Reef, almost under the nose of the statue of Liberty Enlightening the World, all the sewage that now goes into the Passaic River below the falls at Patterson and a considerable tributary district. The Chamber of Commerce and other commercial and civic bodies are called upon to oppose the granting of this application, and this should be done with the utmost emphasis.
>
> Already the Hudson River brings down from towns on both its banks a great mass of filth to be constantly strewn along the bottom of the bay and down to the ship channels, and it has been proposed to carry a connecting sewer in the Bronx over to the same great receptacle. Most of the fish have been poisoned out of the lower stretches of the river and the upper bay, and the Aquarium has had to go out to sea for salt water in which fish will live. In spite of the natural antiseptic quality of salt water there is little doubt that it is becoming so polluted in the harbor as to be a menace to health along its shores. This proposal of New Jersey to add its foul contribution to the mass, which in the course of years may even clog the outlets to the sea, should be resolutely resisted.
>
> There is no excuse for tolerating it, because the indiscriminate dumping of sewage into the nearest stream or natural body of water is an unnecessary and uncivilized manner of disposing of it. Where costly systems of doing this were long ago established and can not be displaced without enormous expense their continuance may be tolerated, though it is becoming a question whether even these shall not be superseded by modern methods of disposal. But to permit new trunk sewers to be established to gather up the filth of a large territory and pour it into New York harbor would be nothing short of an outrage.
>
> Apart from other considerations, this is a most uneconomic method of disposing of sewage, and the Passaic Valley is favorably situated for adopting a system, such as has been established in several civilized countries abroad, of rendering the liquid portion entirely innocuous and converting the solid constituents into fertilizer for market gardens and grain fields. The way for the higher public authority to force the adoption of improved methods is to put a stop to the easy resort to the old and discredited one. If the jurisdiction of the United States over navigable waters extends to the right of the Government to permit this thing to be done and precludes New York from preventing it, the authority should be exercised for the protection of the nation's greatest harbor and not for its further degradation to a cesspool for all the communities that can reach it with their offscourings of filth.

ENFORCEMENT OF THE PURE FOOD LAW.

The statement that more prosecutions under the pure food law have been made in Los Angeles than in any other city, and perhaps in all others put together, is true, but this does not mean that there are more violations of it there than elsewhere. At the present time there are probably less. The reason is that the officers of that county are active in the enforcement of the law. They recognize that they have a duty to perform and they go bravely to it. If the District Attorney's office of every county in the State would push the enforcement of the law as actively as that of Los Angeles we would soon have no impure or improperly labeled food.

DEPARTMENT OF VITAL STATISTICS.

GEORGE D. LESLIE, STATISTICIAN.

PLEA FOR BIRTH REGISTRATION.

The following letter, written to the local paper by an active official, is reprinted because of its pithy statement of the reasons why all births should be promptly registered. The same plea is hereby made to the people of the State, especially the physicians, to the end that 1909 may be a banner year for birth registration in California:

BIRTH REGISTERING.

To the Editor of The News:

SIR: Perhaps all parents, young or old, do not realize the value of properly registering the births of the little ones who come to gladden their hearts and incidentally to increase the anxieties and expenses of the home.

Parents, do you know why or in what way you would gain by insisting on having the children's births registered with the City Health Officer, or if the birth occurs outside the city limits, with the County Recorder?

I will tell you some of the reasons and inducements: First, and most important, all birth certificates are sent to Sacramento and there placed on file and become a permanent and indelible record of the baby's birth and parentage. This is valuable because in settlements of estates the question of parentage might arise, and although all relatives be dead or absent, the record will prove beyond cavil that your baby is the rightful heir-at-law.

Again, all parents should have pride enough in the upgrowth of our city to record an increase of its population, and this birth record carries to our state and national statisticians the information on which they base our state and country's census figures. Were no births recorded, very soon, by death records alone, the land would be depopulated statistically. So, I ask that all to whose homes little ones may come, please insist on your baby receiving its birthright, a properly made out and properly recorded certificate.

Blank certificates may be obtained free of charge of either the County Recorder or City Health Officer. Under the State law governing the compilation of vital statistics, all physicians, midwives or others in charge of a birth are expected to see that such a birth is recorded with the proper officials, but only about one half of the births at present are ever made known outside our community, although our city is a favorite visiting place for the stork, which bird, according to the poet, is a valuable asset to any municipality, so let's offer this toast:

Here's to the stork,
A benevolent bird,
That inhabits the residence districts.
He doesn't sing tunes,
Nor yield any plumes,
But he helps out the vital statistics.

And if the stork visits your home make a noise about it, and let us register the little visitor.

C. H. ANDERSON,
City Health Officer.

SANTA CRUZ, January, 28.

VITAL STATISTICS FOR JANUARY.

Births.—For January there were reported 2,405 living births. The population of California in 1909, estimated by the Census Bureau method with slight modifications, is 2,037,929, and for this population the January births represent an annual birth-rate of 13.9 per 1,000 inhabitants.

The totals were highest for the following counties: San Francisco, 570; Los Angeles, 533; Alameda, 278; Fresno, 98; Santa Clara, 97; San Diego, 61; San Bernardino, 60; and Sacramento, 51.

Altogether 1,539 births were registered in the twenty-four freeholders' charter cities, the leading cities being as follows: San Francisco, 570; Los Angeles, 366; Oakland, 179; San Diego, 49; Berkeley, 45; Fresno and San Jose, each 38; Sacramento, 32; and Stockton, 27.

The aggregate for San Francisco and the trans-bay cities (Alameda, Berkeley, and Oakland) was 817, and for San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo) was 923. Similarly, the total for Los Angeles and neighboring chartered cities (Long Beach, Pasadena, and Santa Monica) was 413, and for the entire county was 533.

Marriages.—The marriages reported for January number 1,719 and for an estimated State population of 2,037,929 represent a rate of 9.9 for the year 1909.

The numbers were greatest for the following counties: Los Angeles, 350; San Francisco, 336; Alameda, 199; Orange, 71; Santa Clara, 67; Sacramento, 64; Fresno, 60; Marin, 57; and San Diego, 50.

The total for San Francisco and the other bay counties was 621.

Deaths.—Altogether 2,622 deaths, exclusive of stillbirths, were reported for January. This total gives an annual death-rate of 15.1 on the basis of an estimated State population of 2,037,929.

The death totals were highest for the following counties: Los Angeles, 579; San Francisco, 553; Alameda, 296; Santa Clara, 109; Sacramento, 97; San Bernardino, 77; San Joaquin, 76; Fresno, 63; Sonoma, 61; and San Diego, 57.

There were altogether 1,562 deaths in the twenty-four freeholders' charter cities, the highest totals being as follows: San Francisco, 553; Los Angeles, 371; Oakland, 144; Sacramento, 72; San Diego, 47; Berkeley and Pasadena, each 46; Stockton, 40; San Jose, 33; Fresno, 28; and Alameda and San Bernardino, each 26.

The aggregate for the urban district (San Francisco and the trans-bay cities) was 767 and for the entire metropolitan area (San Francisco and the other bay counties) was 912. Similarly, the total for Los Angeles and neighboring chartered cities was 448 and for the whole county was 579.

Causes of Death.—In January there were 423 deaths, or 16.1 per cent of all, from diseases of the circulatory system, and 407, or 15.5 per cent, from various forms of tuberculosis, heart disease thus leading tuberculosis as in the last few months.

Other notable causes of death in January were diseases of the respiratory system, 342; diseases of the nervous system, 257; violence, 219; diseases of the digestive system, 183; Bright's disease and nephritis, 151; cancer, 146; and epidemic diseases, 107.

As usual, typhoid fever was the leading epidemic disease in the month, causing 34 deaths, with diphtheria and croup, causing 28 deaths, a close second. In each case, however, the proportions were much less than for the preceding month, a statement which holds true also for most other epidemic diseases.

Further particulars appear in the following table, which gives the number of deaths from certain principal causes reported for January, as well as the proportions from each cause per 1,000 total deaths for both January (1909) and December (1908):

Cause of Death.	Deaths: January.	Proportion per 1,000. January.	Proportion per 1,000. December.
All Causes	2,622	1,000.0	1,000.0
Typhoid fever	34	13.0	20.0
Malarial fever	3	1.1	2.4
Smallpox	1	0.4	0.3
Measles	6	2.3	3.9
Scarlet fever	6	2.3	4.2
Whooping-cough	10	3.8	1.7
Diphtheria and croup	28	10.7	16.1
Influenza	9	3.4	3.5
Other epidemic diseases	10	3.8	5.6
Tuberculosis of lungs	348	132.7	118.7
Tuberculosis of other organs	59	22.5	20.3
Cancer	146	55.7	55.3
Other general diseases	113	43.1	37.1
Meningitis	35	13.4	14.0
Other diseases of nervous system	222	84.7	94.5
Diseases of circulatory system	423	161.3	154.4
Pneumonia and broncho-pneumonia	252	96.1	91.4
Other diseases of respiratory system	90	31.3	31.2
Diarrhea and enteritis, under 2 years	37	14.1	20.0
Diarrhea and enteritis, 2 years and over	11	4.2	9.8
Other diseases of digestive system	135	51.5	48.3
Bright's disease and nephritis	151	57.6	53.6
Childbirth	23	8.8	9.8
Diseases of early infancy	91	34.7	29.4
Suicide	48	18.3	20.0
Other violence	171	65.2	79.5
All other causes	160	61.0	55.0

Geographic Divisions.—The table below shows the number of deaths from main classes of diseases reported for January for the several geographic divisions of the State, including the metropolitan area, or "Greater San Francisco," in contrast with the rural counties north of Tehachapi:

Geographic Division.	Deaths: January. All Causes	Epidemic Diseases	Tuberculosis (All Forms)	Cancer	Diseases of Nervous System	Diseases of Circulatory System	Diseases of Respiratory System	Diseases of Digestive System	Violence	All Other Causes
The State	2,622	107	407	146	257	423	342	183	219	538
Northern California	294	18	32	13	43	44	42	14	35	53
Coast counties	151	5	14	7	33	26	21	10	11	24
Interior counties	143	13	18	6	10	18	21	4	24	29
Central California	1,516	64	205	89	135	274	190	120	133	306
San Francisco	553	17	81	36	44	108	65	38	49	115
Other bay counties	359	17	44	16	31	83	51	29	28	60
Coast counties	190	6	27	12	15	35	22	14	21	38
Interior counties	414	24	53	25	45	48	52	39	35	93
Southern California	812	25	170	44	79	105	110	49	51	179
Los Angeles	579	18	117	33	49	72	84	38	38	130
Other counties	233	7	53	11	30	33	26	11	13	49
Northern and Central California	1,810	82	237	102	178	318	232	134	168	359
Metropolitan area	912	34	125	52	75	191	116	67	77	175
Rural counties	898	48	112	50	103	127	116	67	91	184

DEPARTMENT OF BACTERIOLOGY.

DR. A. R. WARD, DIRECTOR.

"DIOZO."

These experiments were undertaken in the State Hygienic Laboratory to prove the efficiency, or otherwise, of a new product which has lately been put on the market. This commodity is known by the name of "Diozo," and there is claimed for it all those properties which go to make up a perfect disinfectant and deodorizer. Accordingly, tests have been made to determine whether or not "Diozo" fulfills all that is claimed for it. Both the fumes of the "Diozo brick" and the "Liquid disinfectant" made from a solution of the crystals were tested in the following manner:

Pieces of sterile filter paper were inoculated with cultures of pathogenic and non-pathogenic bacteria, and these were used in the subsequent tests. The organisms used were as follows: Micrococcus pyogenes aureus, bacillus pseudomonas pyocyanea, B. subtilis, B. para-typhosus, B. typhosus, B. diphtheriæ.

A solution of the liquid disinfectant was made up according to directions, but varying in strength from a proportion of 1-10, to one of 1-1000. First a strong solution was made by pulverizing the crystals and covering them with water. This was allowed to stand in a covered receptacle for forty-eight hours, in order to obtain a saturated solution. The weaker solutions were made from dilutions of this saturated solution. Strips of the inoculated paper were immersed in the solutions and were allowed to remain certain lengths of time varying from one minute to an hour. As each strip was taken out it was placed in a tube of sterile broth and placed in the incubator. At the end of twenty-four hours it was found that in no case had the action of this "liquid disinfectant" succeeded in killing the bacteria, nor had it in any way checked or retarded their growth. A control test was run in each case, and these all grew well.

The tests of the fumes of the Diozo brick were carried on under a sterile bell jar, in order to avoid any chance of escaping fumes, or anything else which might tend to weaken their action. Strips of the inoculated paper were introduced beneath the bell jar in which a large piece of "Diozo" had been placed several hours before, thereby rendering the air within the jar practically saturated with the fumes. The range of time through which the organisms were exposed to the fumes varied from three to fifty-two hours. A control was run in each case. In no instance did the fumes succeed in killing the organisms exposed to them, although an exposure of fifty-two hours was maintained in some cases.

Following are tables, giving the results of the work in full. In no case did "Diozo" evidence any action on the organism tested, and in no case did a control, culture fail to grow.

TO TEST THE SOLUTION OF DIOZO CRYSTALS.

TABLE I.

Organism.	Time of Exposure.	Strength of Solution.					
		1-10	1-20	1-50	1-100	1-1000	Control.
Bacillus para-typhosus	30 seconds	+	+	+	+	+	+
	1 minute	+	+	+	+	+	+
	5 minutes	+	+	+	+	+	+
	15 minutes	+	+	+	+	+	+
	30 minutes	+	+	+	+	+	+
	45 minutes	+	+	+	+	+	+
	60 minutes	+	+	+	+	+	+

TABLE II.

Organism.	Strength of Solution.	Time of Exposure.			
	1-10	5 Min.	30 Min.	60 Min.	Control.
Pseudomonas pyocyanea	+	+	+	+	+
M. pyogenes aureus	+	+	+	+	+
B. typhosus	+	+	+	+	+
B. diphtheria	+	+	+	+	+
B. subtilis	+	+	+	+	+
	+	+	+	+	

+ = Growth. – = No growth.

TO TEST THE FUMES OF DIOZO.

TABLE I.

Organism.	Time of Exposure.				
	3 Hours.	6 Hours.	18 Hours.	45 Hours.	52 Hours.
Pseudomonas pyocyanea	+	+	+	+	+
M. pyogenes aureus	+	+	+	+	+
Typhoid	+	+	+	+	+
Diphtheria	+	+	+	+	+

The absolute worthlessness of this product as a disinfectant is evident from the results of the above experiments. Diozo, in either form, so far as we can determine, has failed to kill or in any way check the growth of disease-producing and of harmless bacteria; and the extravagant claims of its efficiency seem groundless.

Examinations Made in January.

Diphtheria	94
Tuberculosis	23
Typhoid	11
Water	1
Miscellaneous	9
Total	138
Mailing cases sent out	100

DEPARTMENT OF PURE FOODS AND DRUGS.

PROF. M. E. JAFFA, DIRECTOR.

During the past month a considerable correspondence has been carried on and many examinations made with special reference to the subject of flavoring extracts. It would appear that there is a considerable misunderstanding on the part of the manufacturers of lemon extract as to the solubility of lemon oil in dilute alcohol. The standard for lemon oil as given in Circular 19, Office of the Secretary of Agriculture, is as follows: "Lemon extract is the flavoring extract prepared from oil of lemon, or from lemon peel, or both, and contains not less than five (5) per cent by volume of oil of lemon.

Lemon extract, is the spiritus limonis or essence of lemon of the Pharmacopœia, directed to be made in the following manner:

Oil of lemon	50 cc.
Lemon peel freshly grated	50 grams.
Deodorized alcohol, a sufficient quantity to make	1000 cc.

"Dissolve the oil of lemon in 900 cc. of deodorized alcohol, add the lemon peel, and macerate for twenty-four hours. Then filter through paper, and add, through the filter, enough deodorized alcohol to make the spirit measure 1000 cc."

According to Leach the standard fixed by the Pharmacopœia (5 per cent of lemon oil by volume) is a fair one. In fact, there are commercial extracts on the market containing as high as 9 per cent. An extract of lemon to contain 5 per cent of lemon oil must contain at least *80 per cent by volume of alcohol,* lemon oil being insoluble in dilute alcohol. Deodorized, or purified alcohol, commonly known as cologne spirits or perfumers' alcohol, is used in the highest grade preparations, since the odor of ordinary commercial alcohol produces a slightly deleterious effect.

Though there are many reputable brands of lemon extract on sale containing 5 per cent or more of lemon oil, the market is flooded with the cheaper "ten-cent" variety, many purporting to be pure, others marked simply "compound," and others again with formulas having the name and per cent of the ingredients.

It is seen by the above that in order to dissolve the lemon oil, the alcohol must be at least 80 per cent by volume. Many of the formulas for making lemon extract as used in this state call for a much more dilute alcohol. The result of the use of such dilute alcohol causes a turbidity in the product, which turbidity is due to the percipitation of the lemon oil by water added to the alcohol. In order to get rid of this turbidity, carbonate of magnesia is added. The result is a clear liquid but containing only a fraction of the amount of lemon oil originally used. It is thus indicated that the manufacturer defeats his own purpose by the addition of water to the alcohol to such an extent as to reduce its strength below the necessary limit.

It is thought best to issue this suggestion to avoid the mistakes which have been made in the past by manufacturers without any intention of violating the law.

Some analytical work has been done on honeys with the result that very few samples were found to consist of the pure article. In the matter of labeling honeys, Food Inspection Decision 75 on the labeling of syrups, forms the basis of the rulings made by the State Board of Health. If a substance consists of pure honey, it may be so labeled. If it consists of a mixture of honey and glucose, it should be so labeled, and not labeled as many of the samples received at the Laboratory. For instance, a label will state:

Guaranteed under the Pure Food and Drug Act of June 20, 1906.	HONEY.	Blended with 10% glucose.

This label might be said by some to be branded according to the letter of the law, but it is certainly not according to the opinion of the law and is in violation of Sections 5 and 6 of the California Pure Foods Act of March 11, 1907. The objections to this label are that the word ''honey'' appears in large type and occupies the most prominent part of the label, and the statement ''mixed or blended with 10 per cent glucose'' is in much smaller type, and in a far less prominent part of the label when the label is pasted around the neck of the bottle of the glass.

If a mixture is composed of more than 50 per cent honey, then the label might read, ''honey and glucose.'' If, however, glucose predominates, then the label should read, ''glucose and honey.''

This is an example of a large number of labels that have been received at the Laboratory, and it will be necessary to have such labels changed in some way or another so as to conform to the rulings of the Board. It must be thoroughly understood that the Board of Health does not object in any way to the sale of a mixture of glucose and honey; in fact, there may be those who prefer such a mixture to a straight honey. All that the Board asks in this connection is that the label be not misleading in any particular, and if a mixture is used, the ingredients of such mixture should appear with equal prominence and of the same size type on the label. In other words, let the label tell the truth, the whole truth, and nothing but the truth.

Several samples of maple syrup have been analyzed with a result that in most cases the contents of the packages do not correspond with the labels thereof. Food Inspection Decision 75 forms the basis of the rulings made by the State Board of Health in this matter. This has already been given in Bulletin of this Board for January, 1908, but perhaps a repetition may not be out of place.

In brief, it may be said that a syrup, the sugars of which consist of 51 per cent cane sugar and 49 per cent maple sugar, would be properly branded as "syrup made from cane and maple sugar," or as "cane and maple syrup." The terms "maple sugar" and "maple syrup" may only be used on the label as part of the name when those substances are present in substantial quantity as ingredients. They should not appear on the label as part of the name when only a small quantity of those substances are used to give a maple flavor to the product. A cane syrup containing only enough maple syrup or maple sugar to give a maple flavor is properly labeled as "Cane Syrup Maple Flavor," or "Cane Syrup Flavored with Maple," and further, whenever it is necessary to declare "Cane Sugar" (Sucrose) on a label it should be declared as "Cane Sugar," and not "White Sugar." It is also understood that there is absolutely no difference chemically between pure beet sugar and pure cane sugar.

A large number of miscellaneous samples, including beverages, butters, milks, meats, olive oils, spices, and candy, have been examined. The result of such analyses show the necessity of continued and vigilant inspection along the lines of articles examined.

The following notices of judgments have been received at the Laboratory during the past month:

JUDGMENT No. 36.

Misbranding of Canned Apples and Blackberries.

In accordance with the provisions of Section 4 of the Food and Drugs Act of June 30, 1906, and of regulation 6 of the rules and regulations for the enforcement of the act, notice is given of the judgment of the court in the case of the United States vs. 100 Cases of Tepee Apples and 172 Cases of Tepee Blackberries, a proceeding of libel for seizure and condemnation of said goods under Section 10 of the aforesaid act, lately pending, and finally determined on October 23, 1908, in the district court of the United States for the western district of Missouri, wherein C. H. Godfrey & Son, Benton Harbor, Mich., were claimants. The apples and blackberries were misbranded within the meaning of Section 8 of the aforesaid act, for that the cans containing them were labeled, respectively, "Tepee Apples, Packed by C. H. Godfrey & Son, Benton Harbor and Watervliet, Michigan," and "Tepee First Quality Blackberries, Packed by C. H. Godfrey & Son, Benton Harbor and Watervliet, Michigan," whereas, in fact, the said apples and blackberries were grown and packed in Springdale, Ark.

The case grow out of the following facts:

On or about January 1, 1908, an inspector of the Department of Agriculture found in the possession of the Ridenour-Baker Grocery Company, Kansas City, Mo., 100 cases of canned apples, each can being labeled "Tepee Apples. Packed by C. H. Godfrey & Son, Watervliet and Benton Harbor, Michigan," and 242 cases of canned blackberries, each can being labeled "Tepee First Quality Blackberries. Packed by C. H. Godfrey & Son, Watervliet and Benton Harbor, Michigan." The fruit had been shipped to Ridenour-Baker Company by C. H. Godfrey & Son, from Springdale, Arkansas, during the month of September, 1907. The inspector having procured evidence showing that the fruits involved in this case were grown and packed in Arkansas, it was apparent that they were misbranded under Section 8 of the Food and Drugs Act, and in consequence thereof, on January 24, 1908, the Secretary of Agriculture reported the facts to the United States attorney for the western district of Missouri, who duly filed a libel for seizure and condemnation of the goods under Section 10 of the act, with the result hereinbefore set out.

JUDGMENT No. 37.

Adulteration of Milk (Water).

In accordance with the provisions of Section 4 of the Food and Drugs Act of June 30, 1906, and of Regulation 6 of the rules and regulations for the enforcement of the act, notice is given of the judgment of the court in the case of the United States against Andreas Griebler lately pending in the district court of the United States for the eastern district of Illinois, wherein the said Griebler was charged with the violation of Section 2 of the aforesaid act alleged to have been committed in the shipment and delivery for shipment of adulterated milk—that is to say, milk which contained an excess of water—from Illinois to Missouri. The facts in the case were as follows:

On September 30, 1907, an inspector of the Department of Agriculture obtained samples of milk from a consignment of milk shipped by Andreas Griebler, from Trenton, Ill., to St. Louis, Mo. One of the samples was forthwith analyzed in the Bureau of Chemistry of said department and the following results were obtained and stated:

Specific gravity at 15.5° /15.5° C		1.0259
Fat	per cent	4.67
Total solids	per cent	12.06
Solids not fat	per cent	7.39
Ash	per cent	.63
Refraction at 20° C		37.1
Test for nitrates		Very strong.
Conclusions		Watered.

The standard for milk as defined in "Standards of Purity for Food Products," Circular No. 19, Office of the Secretary, United States Department of Agriculture, published under authority of the act of March 3, 1903, and as recognized by the larger body of reputable producers, is as follows:

Milk is the fresh, clean, lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that obtained within fifteen days before and ten days after calving, and contains not less than eight and one half (8.5) per cent of solids not fat, and not less than three and one quarter (3.25) per cent of milk fat.

It seemed, therefore, that the sample in question was adulterated within the meaning of Section 7 of the Food and Drugs Act of June 30, 1906, in that it appeared to contain an excessive amount of water, thereby reducing its quality and strength. On December 28, 1907, the Secretary of Agriculture accorded the said Griebler a hearing, but as there was nothing disclosed at the hearing tending to show any fault or error in the analysis of the Department, the Secretary, on April 30, 1908, reported the facts to the Attorney-General. These facts were duly referred to the United States attorney for the eastern district of Illinois, who filed an information against the said Griebler, with the result that the matter was referred to a jury who on November 30, 1908, returned a verdict of not guilty, whereupon the said defendant was discharged from further custody.

Full copies of these judgments can be obtained upon application to the Director of the State Laboratory, University of California, Berkeley, California.